APPENDIX IV-E
ACTION LEVELS AND RISK ASSESSMENT

I. DEFINITION

Action levels are conservative health-based concentrations of hazardous constituents determined to be indicators for the protection of human health or the environment. Action levels shall be set for all hazardous constituents, a subset of hazardous wastes, identified in the RCRA Facility Investigation (**RFI**) Report or for those hazardous constituents which the Secretary has reason to believe may have been released from a solid waste management unit (**SWMU**) or Area of Concern (**AOC**) at the Facility. Should the concentration of a hazardous constituent(s) in an aquifer, surface water, soils, or air exceed its action level for any environmental medium, the Secretary may require the Permittee to conduct a Corrective Measure Study (**CMS**) to meet the requirements of 20.4.1.500 NMAC, incorporating 40 CFR §264.101. If the Secretary determines that a constituent(s) released from a SWMU or AOC in quantities below its respective action level(s) may pose a threat to human health or the environment, given site-specific exposure Permit Conditions, cumulative effects, ecological concerns, etc., then the Secretary has the authority to require a CMS to meet the requirements of 20.4.1.500 NMAC, incorporating 40 CFR §264.101.

Action levels shall be concentration levels which satisfy the following criteria:

A. 1. Is derived in a manner consistent with NMED guidelines for assessing human and environmental health risks from hazardous constituents;

2. Is based on scientifically valid studies conducted in accordance with the Toxic Substances Control Act (**TSCA**) Good Laboratory Practice Standards, or equivalent;

3. For human health action levels to address carcinogens, represents a concentration associated with an excess upper bound lifetime cancer risk of 1×10^{-6} for carcinogens due to continuous constant lifetime exposure;

4. For human health action levels to address systemic toxicants, represents a concentration to which the human population (including sensitive subgroups) could be exposed on a daily basis that is likely to be without appreciable risk of deleterious effects during a lifetime.

B. For constituent(s) detected in groundwater, air, surface water, or soils, for which a concentration level that meets the criteria specified in section I.A.1 through I.A.4 of this appendix is not available or possible, the action level for the constituent(s) shall be the background concentration of the constituent(s).

II. GROUNDWATER

A. Action levels for constituents in groundwater shall be concentrations specified as:

1. MCLs; or

2. For constituents for which MCLs have not been promulgated, a concentration which satisfies the criteria specified in Section I.A.1 through I.A.4 of this appendix shall be calculated.

B. In deriving human health action levels for constituents for which MCLs have not been promulgated, the recommended equations/assumptions shall be those in NMED recommended Guidance documents. Because the science of risk assessment is in flux and technical criteria/opinion of today (e.g., content of standardized equations, use of default exposure assumptions, etc.) may change, the Secretary reserves that right to revise the above recommended Guidance as needed to meet the criteria listed in Sections I.A.1 through I.A.4.

III. SURFACE WATER

A. Action levels for constituents in surface water shall be concentrations specified as:

1. Water Quality Standards established pursuant to the New Mexico Water Quality Control Commission (**WQCC**), where such standards are expressed as numeric values; or

2. MCLs for constituents in surface water designated by the WQCC for drinking water supply, where numeric values or numeric interpretations, described in paragraphs 1 and 2, are not available; or

4. For constituents in surface waters designated by the WQCC for drinking water supply for which numeric values, numeric interpretations, or MCLs are not available, a concentration which meets the criteria specified in section I.A.1 through I.A.4 of this appendix shall be calculated assuming exposure through consumption of the water contaminated with the constituent; or

5. For constituents in surface waters designated for use or uses other than drinking water supply and for which numeric values or numeric interpretations have not been established, a concentration shall be established by using the NMED recommended Guidance.

B. In deriving human health action levels for constituents in surface water, the recommended equations/assumptions shall be those developed by NMED in

Assessing Human Health Risks Posed by Chemicals: Screening-level Risk Assessment, August 27, 1999. Because the science of risk assessment is in flux and technical criteria/opinion of today (e.g., content of standardized equations, use of default exposure assumptions, etc.) may change, the Secretary reserves that right to revise the above recommended equations/assumptions as needed to meet the criteria listed in Sections I.A.1 through I.A.4.

IV. AIR

A. Action levels for constituents in air shall be defined as concentrations which meet the criteria specified in section I.A.1 through I.A.4. The action levels for air shall be measured or estimated at the Facility boundary, or another location closer to the unit if necessary to protect human health and the environment.

B. In deriving human health action levels for constituents in air, the reference concentration (**RfC**) should be utilized as the action level, where available. The RfC includes exposure assumptions, and no calculations are necessary to calculate an action level. If a RfC is not available, the recommended methodology/assumptions shall be that contained in the NMED recommended Guidance. Because the science of risk assessment is in flux and technical criteria/opinion of today (e.g., content of standardized equations, use of default exposure assumptions, etc.) may change, the Secretary reserves that right to revise the above recommended equations/assumptions as needed to meet the criteria listed in section I.A.1 through I.A.4.

V. SOILS

A. Action levels for constituents in soils shall be concentrations which meet the criteria specified in section I.A.1 through I.A.4 of this appendix.

B. The calculation of human health action levels for soil includes several specific exposure routes which must be evaluated individually: 1) ingestion, 2) inhalation and 3) leachability to groundwater. In deriving action levels to address ingestion, inhalation and leaching, the methodology/assumptions found in the most recent Soil Screening Level in the NMED revised Guidance such as *Assessing Human Health Risks Posed by Chemicals: Screening-level Risk Assessment, August 27, 1999*.@ should be reviewed for appropriate equations and assumptions. Because the science of risk assessment is in flux and technical criteria/opinion of today (e.g., content of standardized equations, use of default exposure assumptions, etc.) may change, the Secretary reserves that right to revise the above recommended equations/assumptions as needed to meet the criteria listed in section I.A.1 through I.A.4.

VI. SEDIMENT

A. Action levels for constituents in sediment shall be based on whether human health or ecological health is the major concern. If ecological concerns are deemed to predominate, then action levels for constituents in sediment shall be concentrations based on the latest sediment screening values as calculated by following the HRMB/NMED recommended Guidance for Assessing Ecological Risks Posed by Chemicals: Screening-Level Ecological Risk Assessment August. Because the science of risk assessment is in flux and technical criteria/opinion of today (e.g., content of standardized equations, use of default exposure assumptions, etc.) may change, the Secretary reserves that right to revise the above recommended equations/assumptions as needed to meet the criteria listed in section I.A.1 through I.A.4.

If an ecological sediment screening value for a constituent of concern has not been generated by NMED and cannot be generated using the criteria in sections I.A.1 and I.A.2, then the ecological action level for sediment shall be the background. If human health is the prevailing concern, then the human health action level for sediment shall address all applicable exposures.

VII CALCULATION OF ACTION LEVELS

The Permittee shall adhere to RFI guidance in the calculation of action levels for all the environmental media specified in this Module. The Permittee shall ensure that action level calculations account for the potential of exposure to multiple contaminants and through multiple routes. These action levels shall be updated as new toxicity data and promulgated standards (e.g., maximum contaminant levels) are derived. The most recent reference doses, reference concentrations, and cancer slope factors (e.g., data found in EPA's Integrated Risk Information System) shall be used in the calculation of action levels. The toxicity data available at the time that a determination for further action is made (i.e., requirement to conduct a CMS), including interim measures, shall be used in the calculations. If used as final cleanup levels, action levels shall be calculated using the most recent toxicity data and promulgated standards existing at the time of implementation of corrective measures.

VIII RISK ASSESSMENTS{tc \l1 "VIII RISK ASSESSMENTS}

Performance of Risk Assessments{tc \l2 "Performance of Risk Assessments}

The Permittee shall conduct human health and ecological risk assessments to determine risks to human health and the environment. These risk assessments shall be used to establish baseline risk at a site and/or to derive interim or final cleanup levels at the site. These risk assessments, if necessary, shall be performed concurrently with the corrective

action activities specified in this Module, including any activities undertaken during implementation of the activities proposed in the RFI Work Plan. These risk assessments may also be performed concurrently with the RFI Report and Summary and the CMS Phase of this Module, but only after the Permittee has determined the full vertical and horizontal nature, rate, and extent of contamination at each respective SWMU.

Applicable Guidance Documents and Publications{tc \l2 "Applicable Guidance Documents and Publications}

The Permittee shall use the final versions of the following Guidance documents and publications recommended by NMED, including any subsequent revisions, in the performance of the required risk assessments:

- Assessing Human health Risks Posed by Chemicals: Screening-Level Risk Assessment, and

- Guidance for Assessing Ecological Risks Posed by Chemicals: Screening-Level Ecological Risk Assessment., and "Compendium of ORD and OSWER Documents Relevant to RCRA.

[COMMENT1] **3. Baseline Risk Assessments**

Baseline human health and ecological risk assessments, if required by the Secretary, shall be used to evaluate the risks posed by contaminants at a site prior to the beginning of any corrective actions in order to determine the need for remedial action.

Although action levels should be sufficiently protective of human health and the environment, they may be inappropriate under certain circumstances. Such exceptions will apply, but not be limited to the following circumstances. In cases where there are confirmed releases to ground water, surface water, air, or sediments, a baseline risk assessment shall be required to determine the need for stabilization/interim measures, especially where health advisories have been issued by NMED. In addition, action levels may be inappropriate at a site where leaching from contaminated soils into ground water poses greater risk than ingestion of the soils or where food-chain transfer of contaminants may be of human health concern.

If an action level has been exceeded, for any of the environmental media of concern, at any time during the corrective action activities required by this Module, the Permittee may be required to conduct a risk assessment to determine risks to human health and the environment and the necessity to perform interim measures. Risk assessments to determine final cleanup levels or to be used in justifying no further action determinations shall be conducted only after the Permittee has determined the full vertical and horizontal nature, rate, and extent of contamination for each SWMU or groups of SWMUs specified in this Module.

Risk Assessments for Deriving Cleanup Levels{tc \l2 "Risk Assessments for Deriving Cleanup Levels}

Risk assessments, if required by the Secretary, may also be used to establish interim cleanup levels, in addition to the final cleanup level. Risk assessments may be required as specified in this Module. In addition, where selected remedies cannot meet acceptable risk levels or action levels (if action levels are chosen as final cleanup levels), a risk assessment may also be required.

The Secretary will review risk assessments as part of the CMS Phase of the corrective action activities specified in this Module in deriving final cleanup levels, but only after the Permittee have determined the full vertical and horizontal nature, rate, and extent of contamination from each SWMU or groups of SWMUs specified in this Module.

IX. DETERMINATION OF NO FURTHER ACTION (NFA):

Use of Risk Assessments in Justifying No Further Action Determinations by the Permittee.{tc \l2 "c. Use of Risk Assessments in Justifying No Further Action Determinations by the Permittee.}

The Permittee may submit a risk assessment(s) justifying no further action at a SWMU(s) concurrently with submittal of the RFI Report and Summary specified in Permit Condition IV.E.3, only if the Permittee have determined the full vertical and horizontal nature, rate, and extent of contamination for each SWMU or group of SWMUs specified in this Module.

1. Based upon the results of the RFI and other relevant information, the Permittee may submit an application to the Secretary for a Class III permit modification under 40 CFR 270.42 (c) to remove SWMU(s) or AOC(s) from Table A.1 and transfer them to Table A.2 of this Module. This permit modification application must contain information demonstrating that there are no releases of hazardous wastes including hazardous constituents from the SWMU(s) or AOC(s) that pose a threat to human health and the environment, as well as information required by 20.4.1.900 NMAC, incorporating 40 CFR §270.13 through §270.21, §270.62, and §260.63.

If, based upon review of the Permittee's request for a permit modification, the results of the RFI, and other information, including comments received during the sixty (60) day public comment period required for Class III permit modifications, the Administrative Authority determines that releases or suspected releases which were investigated are or non-existent, do not pose a threat to human health and the environment, or were removed or adequately treated to acceptable risk levels during an ICM, the Administrative Authority will grant the requested information.

SITES RECOMMENDED FOR NFA MUST MEET ONE OF THE FOLLOWING CRITERIA:

NFA Criterion i: The SWMU or AOC cannot be located, does not exist, or is a duplicate SWMU or AOC.

NFA Criterion ii: The SWMU or AOC has never been used for the management (i.e., generation, treatment, storage, and/or disposal) of RCRA solid waste or hazardous wastes and/or constituents or other CERCLA hazardous substances.

NFA Criterion iii: No release to the environment has occurred or is likely to occur in the future from the SWMU or AOC.

NFA Criterion iv: A release from the SWMU or AOC to the environment has occurred, but the SWMU or AOC was characterized and/or remediated under other authority (such as the NMED's Underground Storage Tank or Groundwater Bureaus), which adequately addressed RCRA corrective action, and documentation, such as a closure letter, is available.

NFA Criterion v: The SWMU or AOC has been characterized or remediated in accordance with current applicable State and Federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

2. A determination of no further action shall not preclude the Administrative Authority from requiring continued or periodic monitoring of air, soil, groundwater, or surface water, when site-specific circumstances indicate that release of hazardous wastes, including hazardous constituents are likely to occur, if necessary to protect human health and the environment.

3. A determination of no further action shall not preclude the Administrative Authority from requiring further investigations, studies, or remediation at a later date, if new information or subsequent analysis indicates a release or likelihood of a release from the SWMU(s) or AOC(s) that is likely to pose a threat to human health or the environment. In such a case, the Administrative Authority shall initiate either a modification to this Module according to procedures in Section IX. of this Module, or a major permit modification according to 40 CFR 270.41, to rescind the determination made in accordance with Permit Condition IX.

[COMMENT1]Response to Comment H.1-5.